

Morton's Highway Crossing ("O" Avenue Bridge)

HAER No. MI-44

(Bridge 154.32)

Spanning Amtrak (National Railroad Passenger Corporation)
on "O" Avenue

Oshtemo vicinity
Kalamazoo County
Michigan

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

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HISTORIC AMERICAN ENGINEERING RECORD

Morton's Highway Crossing
("O" Avenue Bridge) (Bridge 154.32)

HAER No. MI-44

Location: Spanning Amtrak (North Railroad Passenger Corporation) on "O" Avenue, .3 mile east of the west county line in Oshtemo vicinity, Kalamazoo County, Michigan

UTM: A 16.602400.4675850
Quad: Lawton, Michigan

Date of Construction: 1904

Designer: B. Douglas, Bridge Engineer, Michigan Central Railroad

Present Owner: Indeterminate (Kalamazoo County Road Commission and Amtrak contest ownership)

Present Use: Vehicular bridge, to be demolished in 1991.

Significance: This is the oldest of only three concrete through arch bridges known to survive in Michigan and is one of the oldest concrete bridges of any type left in the state. The structure was determined eligible for listing in the National Register of Historic Places on April 1, 1986.

Project Information: This documentation was undertaken in May 1990 in accordance with the Memorandum of Agreement by the Kalamazoo County Road commission as a mitigative measure prior to replacement of the bridge.

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Morton's Highway Crossing was built as a component of a major project of the Michigan Central Railroad. For purposes of this report, the crossing structure will be called the "O" Avenue Bridge. "O" Avenue has been the designated name of the highway carried by this facility for over four decades and is the common name of the bridge. Bridge 154.32 refers to its milepost along the railroad.

Shortly after 1900, the Michigan Central upgraded its main line between Detroit and Chicago.¹ The line was double tracked with improvements to alignment and grade. Work in Kalamazoo County was accomplished in 1904 and 1905. One of the reduced grades led west out of Kalamazoo. Between Kalamazoo and Mattawan, in Van Buren County, a completely new route was built. To separate rail and highway grades, this action included the construction of a bridge at "O" Avenue and at four other locations.

The upgrading project exemplified the importance of railroads at the turn of the century. Dunbar has termed the half century between the Civil War and World War I, the golden age of rail travel in Michigan.² During this period, capital was available for expensive projects.³ Following the Civil War, the state's rail system expanded greatly. However, from 1900 on, the focus shifted to financial consolidation of companies and improvement of existing lines.⁴ The general rule was the steeper the gradient, the lower the line's profitability.⁵ The original Michigan Central line between Kalamazoo and Mattawan was constructed in 1848. West of Kalamazoo, a summit was encountered at Oshtemo Hill. It was one of the highest points on the railroad between Detroit and Chicago.⁶ This stretch of track was a constant source of annoyance to company officials.⁷ It not only blocked the fast traffic, but made impossible the operation of the number of trains desired.

The route was relocated north of the village of Oshtemo. This lengthened the line but reduced curves and grade. The relocation was known as the Miller cutoff.⁸ On the crossing plans, it is the "Ostemo" Diversion. The first regular train service to pass over the diversion (and under the "O" Avenue Bridge) was on August 13, 1905.⁹

Tours of railroad officials inspecting the progress of the double track work received notice in the press. William Rockefeller, railroad owner and brother of Standard Oil magnate John D. Rockefeller, stopped in Kalamazoo and was interviewed by the Kalamazoo Gazette.¹⁰ Rockefeller was quoted as saying, "When the last rail is laid...the Michigan Central will be a railroad second to none."

The diversion had a major effect on the landscape and social implications. It employed regular cuts and fills of up to 30 feet. At "O" Avenue, a cut of approximately 23 feet was required. Its 150-foot-wide right-of-way traversed farms and divided parcels. The "O" Avenue Bridge is situated just 100 feet from an Italianate farm house built about 1880. In Oshtemo, there was a depot and a dwelling which was run as a boardinghouse for the men of the Michigan Central.¹¹ The new route pass more than a mile and a half farther north. The Kalamazoo Gazette queried: "Is the little village of Oshtemo to die...or is the town to continue in existence as a quiet little village without the Michigan Central?..."¹² Helping to allay such concern was the sale of the old route to the Kalamazoo, Lake Shore and Chicago Traction Company. Planned as an electric interurban, the line continued to operate with steam until its abandonment in 1923.¹³

The "O" Avenue Bridge is an example of a very early concrete bridge in Michigan. Reinforced concrete bridges were developed in France and Switzerland in the early 1880s and the first American concrete arch was built in San Francisco in 1889.¹⁴ The "O" Avenue structure is a three span side or through arch bridge. It was made with minimal reinforcement. The deck contains encased steel I-beams arranged at right angles to the road centerline. Arches on piers carry a 44-foot center span (bearing to bearing) over the railroad. Side walls support the east and west spans. Abutments are small and rest without pilings at the top of embankment side slopes. Maximum structure length is about 135 feet. Parapet walls limit the clear roadway to 18 feet. Horizontal underclearance available to the railroad is 30 feet. Arches, piers and side walls were cast as a single unit.

Distinctive architectural features include rainbow arches and side walls that enclose the space beneath the east and west spans. A 3-foot by 4-foot opening in each south side wall provides access to the enclosed areas. Except for vertical support posts in the outside relief of parapets, there is no ornamentation. Also, there is no nameplate. All exposed outside surfaces were faced with one-and-a-half-inch of mortar.

Notes superimposed on construction plans indicate that in November 1917 an old macadam deck was replaced with concrete. The present surface is asphalt over concrete.

As mentioned previously, four other bridges were built on the diversion. Overhead highway bridges with concrete encased steel I-beams arranged parallel to the road centerline were built at 8th Street and at 9th Street. At West Michigan Avenue, a steel girder span carried the railroad over the highway. Nearby, at 1st Street, a through arch bridge, almost identical to the "O" Avenue Bridge, was built. Because its angle of crossing was more acute, its center span and overall length were greater. None of these bridges still survive.

B. (Benjamin) Douglas is credited with designed the bridge.¹⁵ His signature of approval is on its construction plans, as well as on the plans of at least three of the other bridges on the diversion. In 1908, he was listed in The Book of Detroiters, a biographical dictionary of Detroit's living leading men.¹⁶ Douglas was born in Detroit, Michigan, on December 10, 1859. His residence was in nearby Grosse Ile. In 1882, he earned a B.S. degree from the University of Michigan. That same year, he began his professional career as assistant engineer of the Detroit Bridge and Iron Works. He became bridge engineer for the Michigan Central in 1885 and tunnel engineer for the Detroit River Tunnel Company in 1905. An auxiliary of the Michigan Central, the latter company is noted for the novel construction of the railroad tunnel under the river.¹⁷

An article was published in the Detroit News, upon Douglas' death in November 1911.¹⁸ Douglas died as a result of a fall from a bridge he was inspecting in Brazil, South America. The article relates that because of his splendid work done in connection with the tunnel, the chief engineer of the Michigan Central chose Douglas when asked to recommend a man to inspect and suggest improvements for the bridge work on the South Brazilian Railroad. The assignment was pleasing to Douglas, as it gave him rank as an international engineer. He went to Brazil in March 1911 and had planned to come home by year's end to take up the grade separation work of the entire Michigan Central system.

His body was returned to Michigan. A special train conveyed the funeral party from Grosse Ile to Detroit and interment in Elmwood Cemetery.¹⁹

Ownership and maintenance responsibility for the "O" Avenue Bridge has changed several times. On May 27, 1904, the Commissioner of Highways of Texas Township signed an agreement with the Michigan Central, permitting construction of the grade separation.²⁰ The commissioner was authorized to sign the agreement by resolution of the township board.²¹ The document indicates that the railroad is about to cross the highway and states:

1. It is agreed that the said crossing shall be made by carrying the highway over the railroad by means of an overhead highway bridge, with a clearance of eighteen feet in width....
2. Said Railroad Company will bear the entire expense of constructing said bridge and of putting the highway at said crossing in suitable condition for public travel in the first instance, and will thereafter at all times maintain the said bridge. The said Township will maintain the approaches and the roadway.
3. Said Railroad Company hereby waives all claims it may have for any injury resulting to it from such separation or change of grade.

In 1930, the New York Central Railroad acquired a 99-year lease on the Michigan Central.²² On April 1, 1935, jurisdiction of "O" Avenue was transferred from the township of the Kalamazoo County Road Commission.²³

In 1968, The New York Central was merged with the Pennsylvania Railroad to form the Penn Central Transportation Company.²⁴ on April 1, 1976, following bankruptcy of Penn Central and the passage of various federal railroad acts, Amtrak acquired the segment of track between Kalamazoo and Michigan City, Indiana. However, actual ownership of the bridge is unclear. Amtrak asserts it received the properties of the Michigan Central free and clear of any liens or encumbrances, and repudiates the 1904 contract.²⁵

ENDNOTES

1. Graydon M. Meints, "A Bewildering Maze: The Growth and Development of the New York Central System in Michigan." Paper in Local History Collection in Kalamazoo Public Library, September 6, 1982, p. 2.18.
2. Willis Frederick Dunbar, All Board! A History of Railroads in Michigan, Grand Rapids: William B. Eerdmans Publishing Company, 1969, p. 201.
3. Dunbar, All Aboard, p. 220.
4. Edmund A. Calkins, "Railroads of Michigan Since 1850," Michigan History 13, 1929, p. 14.
5. Davis Dickason, "Transportation," in Kalamazoo County: Geology and the Environment, ed. Richard N. Passero, Western Michigan University, 1978, p. 5.
6. A. Rodney Lenderink, "Kalamazoo, Lake Shore and Chicago: 'The Fruit Belt Line,' A Story of Frustrations." Personal paper of A. Rodney Lenderink, Kalamazoo, Michigan, n.d., p. 5.
7. "Buys the Old Road," Kalamazoo Gazette, August 20, 1905.
8. Thomas D. Brock, "Paw Paw Versus the Railroads," Michigan History 39, 1955. p. 174.
9. See endnote 8 above.
10. "Great Future For Kalamazoo," Kalamazoo Gazette, March 26, 1905.
11. Mary Sumner, "A Repot on Oshtemo Township." Paper in Oshtemo Branch of Kalamazoo Public Library, June 1963, pp. 14-15.
12. "Villagers Do Not Mourn Loss," Kalamazoo Gazette, August 13, 1905.
13. Jack E. Schramm, William H. Henning and Richard R. Andrew, When Eastern Michigan Rode the Rails III. Transit Across Michigan by Interurban, Train, Bus, Special 109, Glendale, California: Interurban Press, 1988, pp. 151-152.
14. Charles K. Hyde, Michigan's Highway Bridges: History and Assessment, Detroit: Wayne State University, 1985, pp. 41-42.
15. Hyde, Michigan's Highway Bridges, p. 168.
16. Albert Nelson Marquis, The Book of Detroiters, A Biographical Dictionary of Leading Living Men of the City of Detroit, Chicago: A. N. Marquis and Company, 1908, p. 146.

17. "The Detroit River Tunnel," Engineering News, October 31, 1907, p. 453.
18. "Benjamin Douglas Dies of Injuries," Detroit News, November 14, 1911.
19. "Benj. Douglas Buried," Detroit Journal, December 28, 1911.
20. Memorandum of Agreement between the Commissioner of Highways of the Township of Texas and the Michigan Central Railroad Company, May 27, 1904, on file in Texas Township Hall.
21. Certified copy of resolution passed by Township Board of Texas Township, Kalamazoo County, May 27, 1904, on file in Texas Township Hall.
22. Michigan Department of Transportation, Detroit-Chicago Corridor High Speed Rail Technical Report, June 1985, p. 7.
23. Kalamazoo County Road Commission, Record of Minutes 4, December 21, 1931 to April 9, 1951, pp. 220-221.
24. Department of Transportation, High Speed Rail Report, p. 8.
25. Letter from Craig to Lewis, National Railroad Passenger Corporation, May 15, 1987.

